ANNEX F (COMMUNITY INTERVENTION)

REFERENCE:

1. Implementation Plan for the National Strategy for Pandemic Influenza, Homeland Security Council, (May 2006)
2. HHS Pandemic Influenza Implementation Plan (August 2006 Draft)
3. WHO Writing Group. Non-pharmaceutical Interventions for Pandemic Influenza, National and Community Measures. Emerging Infectious Diseases 12(1), (January 2006), 88-94
4. Centers for Disease Control and Prevention. Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early, Targeted, Layered Use of Nonpharmaceutical Interventions, February 2007.

1. SITUATION

a. The "center of gravity" of the pandemic response will be in local communities. Preparedness at the State/Local/Territorial/Tribal (SLTT) levels is critical to the country's ability to respond to and recover from an influenza pandemic. For influenza pandemic preparedness to be effective, it must be a coordinated, multifaceted effort engaging both traditional public health and health care partners and other public, private, and non-governmental organization (NGO) sector partners. All case, population, and personal based intervention strategies are applicable in U. S. communities.

b. The optimal strategies for prevention and control of pandemic influenza are the same as for seasonal influenza: vaccination, early detection and treatment with antiviral medications, and the use of infection control measures to prevent transmission during patient care. However, when a pandemic emerges, a vaccine may not be available, and the supply of antiviral drugs may be limited. Therefore, nonpharmaceutical public health strategies and techniques (augmented by selective use of antiviral drugs) will be essential to minimize infection, delay spread, and reduce the impact of pandemic disease, especially during the initial wave (s).

c. Nonpharmaceutical approaches include home isolation of ill persons, home and facility quarantine of those exposed, community social distancing measures (e.g., closure of public

places, closure of specific worksites, stoppage of public transportation, school closures), personal hygiene measures, and infection control in healthcare and other venues. Local health officials should be prepared to implement, monitor, and evaluate these non-pharmaceutical techniques as dictated by disease dynamics in their communities.

2. MISSION

Communities will employ pharmaceutical and nonpharmaceutical measures to counter the effects of an influenza pandemic. CDC will provide timely guidance and support to communities.

3. EXECUTION

a. Concept of Operations

From the initial emergence of an influenza pandemic and through subsequent pandemic waves, the public health and healthcare sectors can utilize an assortment of intervention strategies and operational techniques to stop (contain) or slow/limit (mitigate) emergence, importation, spread, and impact of pandemic influenza. Interventions can be classified as case-based, population-based, or personal-based.

1) Case-based interventions for pandemic influenza focus on direct management of ill persons and their close contacts to prevent new infections and limit chains of transmission. Operational techniques involve recognition, confirmation, isolation and treatment of case-patients plus the identification, quarantine, and antiviral prophylaxis of contacts. Case based interventions can be utilized especially during the pandemic alert period as part of international or domestic containment efforts to stop a pandemic from emerging or delaying amplification of transmission in a community.
2) Population-based interventions include actions directed at susceptible groups or entire communities to delay spread. These include a variety of social distancing techniques as well as mass prophylaxis (used in specialized containment efforts) and mass vaccination.
3) Personal-based interventions are behavioral risk-reduction actions that further limit exposure among susceptible persons. These include voluntary self-sheltering, standard infection

control practices among healthcare workers, hand hygiene, respiratory etiquette, and disinfection of potentially contaminated surfaces.

4) These three classes of intervention strategies and techniques are summarized in Table 9, below:

Table 9: Classes Of Intervention Strategies And Techniques

Intervention Strategy	Intervention Technique
Case-Based Interventions	
Separate ill or infectious persons from others in the general population to restrict interaction with susceptible persons	Case (patient) management—Isolation (pending or following laboratory confirmation)
Treat symptomatic persons to mitigate disease, suffering, and death, and reduce infectiousness	Case (patient) management—Antiviral treatment
Separate exposed persons (prospective or potential cases) from the general population to stop new chains of transmission from beginning	Contact management—Contact quarantine (mandatory or voluntary) (following contact tracing)
Provide medical prophylaxis to prospective cases to treat sub-clinical infection	Contact management—Antiviral prophylaxis (active)
Population-Based Interventions	
Separate exposed groups from the general population to stop new chains of transmission from beginning	Contact management—Group quarantine (voluntary) (following exposure in a defined group or site)
Reduce the interaction of potentially exposed groups and infectious persons in the general environment to stop new chains of transmission from beginning	Social distancing including: Limitations on location-based gatherings/events (compulsory and voluntary) (e.g., schools, work sites, mass gatherings, public transportation, etc.) Travel restrictions (compulsory and voluntary) to and from affected areas (domestic and international)
Provide medical prophylaxis to potentially exposed groups to reduce susceptibility	Risk group antiviral prophylaxis (passive) (e.g., nursing home residents, etc.)
Provide mass medical prophylaxis to potentially exposed groups to treat sub-clinical infection	Risk zone antiviral prophylaxis (active/targeted as in a containment event)
Actively reduce susceptibility in the general population	Immunization with pandemic vaccine
Personal-Based Interventions	
Reduce the interaction of susceptible and infectious persons in the general environment to stop new chains of transmission from beginning	Self-sheltering (voluntary)
Use personal physical barriers that reduce the risk of infection in frequently exposed individuals	Personal protective equipment (PPE) and infection control in EMS and healthcare settings
Preventively remove infectious organisms acquired by inadvertent contact with infectious persons or contaminated objects	Hand hygiene
Limit respiratory spread of infectious organisms	Respiratory etiquette
Disinfect or dispose of objects contaminated by infectious persons	Environmental disinfection in EMS, healthcare, and other settings

5) This Annex focuses on public health interventions in general and highlights the importance of pharmaceutical interventions (antiviral drugs and vaccines) and nonpharmaceutical interventions (community mitigation) and their roles in an influenza pandemic, to include CDC's responsibilities for them.

6) Domestic Response. If containment abroad and efforts to prevent importation fail, and an introduction of pandemic influenza into the United States appears inevitable or has begun, U.S. communities will be required to mobilize resources and implement interventions directed at stopping, limiting or otherwise slowing the spread of disease throughout the country. This could minimize suffering and death, reducing economic and social effects of an influenza pandemic. CDC will provide containment and mitigation support to community efforts via ESF #8, with technical assistance, financial aid (as available), materials, and formal guidance.

b. Pharmaceutical and Medical Countermeasures

COTPER (DSNS) works closely with SLTT governments during their pandemic preparedness efforts and focuses on providing assistance with planning, coordinating, and distributing pharmaceutical and medical countermeasures (antiviral drugs, intravenous antibiotics, PPE, ventilators, and other medical supplies). Unlike other commodities discussed here, vaccine will not be shipped to SLTTs via SNS. CCID will coordinate the delivery of pandemic vaccine from the manufacturer to recipients designated by SLTT health departments. Cooperative agreements have provided SLTT partners with federal funds to accomplish influenza planning and preparedness. COTPER (DSNS) has provided SLTT governments with planning guidance and training assistance to increase their readiness. In the State and Local Pandemic Influenza Planning Checklist, HHS/OS encourages SLTT governments to provide adequate planning to receive, stage and store (RSS) SNS assets, to have the necessary infrastructure in place to disseminate SNS assets to local facilities and to provide the necessary physical and protective security measures for storage and transport of SNS assets. OSEP/OD/CDC may be required to coordinate additional security.

c. Countermeasure Tasks (Antiviral Drugs)

Inter-Pandemic Period: (WHO Phases 1-2; USG Stage 0)

1) DSNS

a) Procure and maintain antiviral drugs and other countermeasures in accordance with goals established by HHS and CDC.

b) Develop plans to distribute antiviral drugs and other countermeasures in accordance with allocations and priorities set by HHS/OS as well as National, HHS, and CDC plans

c) Deploy Federal Medical Stations (FMS) – as directed.

Pandemic Alert Period: (WHO Phases 4-5; USG Stage 2)

1) DSNS

a) On order, distribute up to 5% of antiviral drugs to international sites.

b) Push out antiviral drugs *pro rata* to 62 project areas

c) Distribute masks and respirators *pro rata* to 62 project areas. Refer to Appendix 1 (Antiviral Drug Distribution and Use) to ANNEX F.

d) On order, ship additional SNS assets (PPE, ventilators, intravenous antibiotics, and medical supplies), *pro rata* to project areas. Refer to Appendix 1 (Antiviral Drug Distribution and Use) to ANNEX F.

e) Acquire replacements for all above as funds become available.

Pandemic Period: (WHO Phase 6; USG Stages 3-6)

1) DSNS:

a) Coordinate the distribution of antiviral drugs and other countermeasures to SLTT RSS.

b) Plan for receipt and utilization of additional pandemic funds.

c) Pack replacement antiviral drugs and other countermeasures in preparation for shipment to newly designated locations.

d) Containment stockpile (domestic) - TBD

2) NCIRD:

a) Monitor the effectiveness of antiviral drugs.

b) Monitor the safety of antiviral drugs.

d. Countermeasure Tasks (Vaccines)

Inter-Pandemic Period: (WHO Phase 1-2; USG Stage 0)

1) NCIRD:

a) Provide guidelines and training for SLTT health care providers.

b) Assist SLTT groups with planning for the allocation and distribution of vaccines to pre-designated sites, as well as the receipt and further distribution of vaccines to the end user.

c) Negotiate vaccine purchase contracts to include stipulations that manufacturers must provide vaccine security during the manufacturing process and shipment to pre-designated sites.

d) Work with manufacturers in developing a distribution and notification of shipment plan to facilitate direct shipping to pre-designated sites.

e) Develop guidance for SLTT groups for designing immunization clinic layout, identifying key functions, recruiting clinic staff to fill key functions, and training clinic staff on patient flow management and vaccination procedures.

f) Develop vaccination messages directed to providers, the press, and the general public about influenza, influenza vaccine, rationale for use of priority groups, administration of additional vaccine doses if required.

g) Assist HHS/OS in developing guidelines for prioritization and sub-prioritization of immunizations.

h) Plan for vaccine effectiveness studies.

2) Science Vision and Alliances Team, Office of Chief Science Officer (OCSO):

a) Identify and disseminate guidance to CDC Leadership Team on all ethical issues regarding vaccines.

Pandemic Alert Period: (WHO Phase 4-5; USG Stage 2)

1) NCIRD:

a) On order, notify vaccine manufacturers to distribute vaccine to pre-designated sites.

b) Notify SLTT pre-designated sites, via a contract call center, about shipment tracking numbers to ensure safe delivery.

c) Disseminate HHS/OS driven priority and sub-priority vaccination guidelines through public and private sector partners.

d) Provide information to SLTT groups on vaccine receipt procedures, and storage of vaccines and ancillary supplies.

e) Establish plans for tracking population vaccination coverage levels (with National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP).

Pandemic Period: (WHO Phase 6; USG Stages 3-6)

1) NCIRD:

a) Assist with the revision of HHS/OS prioritization guidelines based upon the characteristics of the pandemic.

b) Distribute HHS/OS procured pre-pandemic influenza vaccine along with ancillary supplies within 24 hours of notification to designated locations according to HHS/OS vaccination priorities.

c) Compile and analyze vaccine dose tracking information and share with SLTTs (with NCPHI).

d) Assess vaccine effectiveness.

e) Monitor the impact of antigenic drift on the potential efficacy of different vaccination approaches.

f) Track population vaccination coverage levels (with NCCDPHP).

2) OCSO:

(1) Monitor the safety of vaccines.

e. Coordinating Instructions:

1) To request a current copy of the "Receiving, Distributing and Dispensing National Stockpile Assets, A Guide for Preparedness" email the CDC Division of Strategic National Stockpile, Program Preparedness Branch at SNS_PPB@cdc.gov.

2) Refer to Appendix 1 (Informatics) to Annex K (Information Management) for tracking countermeasures.

3) For antiviral and vaccine specific taskings on a webpage, access CDC Influenza Pandemic Action Register. Enter COTPER/DEOC portal (http://eocportal.cdc.gov); scroll down to Pandemic Flu Planning event window, and click on CDC Influenza Pandemic Action Register. Select "Strategic National Stockpile" in the drop down box entitled "Division for DSNS Taskings." Select "ISD" in the drop down box entitled "Division for Vaccine Taskings."

   See Annex E Reference 6 and Appendix 3 (Community Mitigation) to Annex F for more detailed information on nonpharmaceutical intervention strategies.

4. SUPPORT SERVICES

Refer to Base OPLAN paragraph 4.

5. MANAGEMENT AND COMMUNICATIONS

Refer to Annex K (Information Management).

APPENDIXES

1. Use of Antiviral Drugs
2. Pandemic Influenza Vaccinations
3. Community Mitigation
4. Management and Distribution of Antiviral Drugs and Other Countermeasures

APPENDIX 1 (USE OF ANTIVIRAL DRUGS) TO ANNEX F

TO BE PUBLISHED

APPENDIX 2 (PANDEMIC INFLUENZA VACCINATION) TO ANNEX F

REFERENCE:

Centers for Disease Control and Prevention, Pandemic Influenza Vaccination: A Guide for State, Local, Territorial and Tribal Planners, December 11, 2006

1. SITUATION

a. Assumptions

1) Vaccine production will require 4 – 6 months from the time the pandemic vaccine strain is selected.
2) Only U.S.-manufactured vaccines will be available for U.S. purchase during a pandemic.
3) Availability of pandemic vaccine will be a function of both manufacturing capacity and use of adjuvants. Planners should assume that the amount of vaccine produced monthly will cover 1.5% of the population (with 2 doses). Planners should note that supply could be greater or smaller.
4) Up to 20 million persons, critical to the maintenance of the national infrastructure will be vaccinated with stockpiled pre-pandemic vaccine once sustained person-to-person transmission has been documented anywhere in the world.
5) Priority groups are divided into occupationally-defined groups and risk-based groups.
6) Priority groups for pre-pandemic and pandemic vaccination are currently under review and release of the recommendations is anticipated in April 2007. Priority group recommendations are subject to change based on epidemiological information once a pandemic begins.
7) Medical materiel to support the administration of vaccinations will be the responsibility of the administering activity.

b. Planning Considerations

1) A pandemic vaccination program will take place over many months and involve vaccinating an unprecedented number of persons. It will likely unfold in several phases:
   a) Phase 1: Vaccination with stockpiled pre-pandemic vaccine, conducted by public health.

b) Phase 2: Vaccination with pandemic vaccine, conducted by public health (or designees).

c) Phase 3: Vaccination with pandemic vaccine, conducted by the private sector.

2) Vaccine administration must be carefully controlled due to limited supply, and must be targeted to priority groups.

3) Vaccine availability may be more or less than planned; therefore flexibility in planning is essential.

4) Maintaining sufficient staffing for the vaccination effort will be a key challenge given the anticipated duration of the pandemic vaccination program. Delegation of vaccination to other institutions or agencies where appropriate will help free up public health personnel for other activities.

2. VACCINE DISTRIBUTION AND ALLOCATION

Project areas will determine allocation of vaccine within their jurisdictions. Distribution of vaccine will involve shipment to pre-arranged ship-to sites in each project area. Project areas will be responsible for security of vaccine at these storage sites.

a. Planning actions by project areas

1) Estimate weekly allocation of vaccine based on vaccine availability assumptions and population size.

2) Designate up to 100 storage sites. These sites may be local or tribal health departments, as well as clinical settings such as hospitals.

3) Determine allocation of vaccine to each site.

4) Determine further allocation of vaccine from storage sites, if applicable.

5) Ensure availability of sufficient cold storage at all locations.

6) Determine how vaccine will be transported to each vaccinating site.

7) Develop chain of custody procedures.

8) Develop a vaccine security plan.

b. Distribution considerations

1) The major advantage of having limited storage sites is greater control over vaccine stocks.

2) The major disadvantage of having limited storage sites is the increased need for resources for repackaging, local transport, and security.

c. Allocation considerations

1) For occupationally-defined groups: allocation of vaccine within project areas will need to be based on location of employment.

2) For risk-based groups, vaccine should be allocated based upon total population size.

d. Security considerations

1) The limited supply of pandemic vaccine will render it an extremely valuable resource. Security planning at all levels, from ship-to sites to administration, must be comprehensive and rigorous.

2) Law enforcement must be an active partner in planning at both state and local levels with clear delineation of roles and expectations.

3. VACCINATION OF PRIORITY GROUPS

a. Planning actions

1) For each target group, determine whether it will be vaccinated by public health, by institutions to which the responsibility has been delegated, or a combination of both.

2) Develop memoranda of agreement, where applicable.

b. Develop protocols for verification of priority group membership.

c. Considerations for vaccination of specific groups:

1) Inpatient healthcare workers and support staff.

a) Vaccination delegated to hospitals, nursing homes, etc. A point-of-contact at each institution should be identified to be responsible for ensuring that all eligible staff are vaccinated and that dose tracking requirements are met.

b) When vaccinations are provided by the public health department, the healthcare institution should provide a list of eligible personnel.

2) Outpatient healthcare workers and support staff.
   a) Distribution sites should be designated where medical office staff may pick up vaccine stocks.
   b) Public healthcare departments may elect to centralize vaccination of medical offices to prevent waste.
   c) Medical offices may be required to prioritize staff recipients of vaccine within the office to best enable them to continue to provide services.
3) Public safety personnel may be vaccinated by public health departments or delegated to healthcare institutions.
   a) Large police and fire departments may have internal resources to administer vaccines.
   b) EMS groups may be called upon to vaccinate personnel.
4) Persons responsible for critical infrastructure: TBD
5) Persons at risk of serious outcomes and their contacts: TBD

d. Considerations for verification of priority group membership.

1) Validated lists should be provided to ensure that vaccine is not used for persons outside the priority group (such as family members).
2) Risk-based groups may be verified by requiring a doctor's statement or copies of prescriptions
3) Public health departments should encourage persons with chronic conditions to seek documentation before the onset of a pandemic.

4. LOGISTICS ISSUES

a. Planning actions

1) Determine number and location of clinics.
2) Estimate number of doses to be administered per shift.
3) Determine staffing requirements for each clinic to support long term activity.
4) Identify sources of staffing and develop MOAs.
5) Develop training plans.

6) Develop security plans which consider crowd control and vaccine security.
7) Develop incident response plans for potential riots and other incidents.
8) Develop plans for administration of second dose which consider provision of information about need and scheduling.
9) Develop infection control plan
10) Conduct vaccination clinic exercises.

b. Planning considerations

1) Large scale vaccination planning must consider both accessibility to clinics and available staffing.
2) Infection control measures may include:
   a) Separate potential influenza cases from non-ill persons.
   b) Select large facilities to lessen crowding.
   c) Minimize wait times by issuing tickets or reservations.
   d) Hold open air clinics where feasible.
   e) Offer hand hygiene materials, tissues, and waste receptacles on site.
   f) Consider provision of masks for clinic staff, and potentially to vaccinees where clinic crowding cannot be avoided.
3) Tribal Populations
   a) No separate allocation for IHS-served populations, so IHS and tribal planners must be included in state and local planning.
   b) Cross border planning must be ensured where appropriate.
   c) Indian Health Service and tribal community healthcare personnel should staff tribal vaccination clinics.
4) Special Needs Populations
   a) Ensure information is available in local languages.
   b) Accommodate personnel without transportation and those requiring specialized transportation.
   c) Accommodate the needs of people with physical disabilities..

d) Plan for vaccinating homebound persons.

e) Ensure communication with special needs populations.

5. DOSE ADMINISTRATION.

a. Planning actions:

1) Determine how minimum data elements and other project area-required data will be collected at administration sites (minimum data elements: date of administration, age group, priority group, 1st or 2nd dose).

2) Determine how data will be transmitted from administration sites to local and state health departments.

3) Determine how minimum data elements will be transmitted to CDC.

4) Determine personnel needs.

5) Develop a training plan.

6) Determine equipment needs.

b. Planning considerations for tracking of vaccine doses administered:

There will be 3 main options for transmission of these data: use of Immunization Information Systems, direct entry of patient level information into the Countermeasure Response Administration (CRA) system or manual data collection with entry of aggregate information into CRA (only aggregate information will be transmitted to CDC).

c. Planning consideration for ascertainment of vaccine coverage.

State level coverage will be ascertained using either the Behavioral Risk Factor Surveillance System, or the National Immunization Survey.

6. VACCINE SAFETY MONITORING.

a. Planning actions:

1) Designate a vaccine safety coordinator.

2) Review policies for reporting adverse events.

3) Develop a plan to ensure timely reporting of adverse events when volume is large.

4) Familiarize program staff with reporting procedures.

5) Planning considerations: VAERS will serve as the foundation for adverse event monitoring, and will be augmented in ways to strengthen its capacity.

b. Administering vaccine under Emergency Use Authorization:

If a national emergency is declared by the Secretary, HHS, the FDA Commissioner may authorize the use of an unapproved medical product or an unapproved use of an approved medical product. EUA requirements include:

1) Record keeping (vaccinee's name and contact information)

2) Distribution of information sheets to healthcare providers and patients.

3) Adverse event reporting via VAERS.

APPENDIX 3 (COMMUNITY MITIGATION) TO ANNEX F

REFERENCE:

Centers for Disease Control and Prevention. Interim Pre-Pandemic Planning Guidance: Community Strategy for Pandemic Influenza Mitigation in the United States – Early, Targeted, Layered Use of Nonpharmaceutical Interventions, February 2007.

1. SITUATION

a. Center of Gravity:

During a nation-wide influenza pandemic, the main thrust of domestic pandemic response will occur in local communities. CDC's operational role in nonpharmaceutical interventions (NPI) will be interpretation, assessment, monitoring, and evaluation.

b. Goals:

The goals of the Federal Government's response to an influenza pandemic (USG Stage 5) are to limit the spread of a pandemic; mitigate disease, suffering, and death; and sustain infrastructure and lessen the impact on the economy and the functioning of society.

c. Background:

Mathematical modeling and historical analysis of influenza pandemic scenarios in the United States suggest that pandemic mitigation strategies utilizing multiple NPIs may decrease transmission substantially. Even greater reductions may be achieved when such measures are combined with the targeted use of antiviral medications for treatment and prophylaxis. Recent preliminary analyses of cities affected by the 1918 pandemic show a highly significant association between the early use of multiple NPIs and reductions in peak and overall death rates. Without mitigating interventions such as NPIs, even a less severe pandemic would likely result in dramatic increases in the number of hospitalizations and deaths. In addition, an unmitigated severe pandemic would likely overwhelm our nation's critical healthcare services and impose significant stress on our nation's critical infrastructure. Ultimately, reducing the number of persons infected is a primary goal of pandemic planning. NPIs may help reduce

influenza transmission by reducing contact between sick and uninfected persons, thereby reducing the number of infected persons.

Reducing the number of persons infected will also lessen the need for healthcare services and minimize the impact of a pandemic on the economy and society. The surge of need for medical care that would occur following a poorly mitigated severe pandemic can be addressed only partially by increasing capacity within hospitals and other care settings. Reshaping the demand for healthcare services by using NPIs is an important component of the overall mitigation strategy. In practice, this means reducing the burdens on the medical and public health infrastructure by decreasing demand for medical services at the peak of the epidemic and throughout the epidemic wave; by spreading the aggregate demand over a longer time; and, to the extent possible, by reducing net demand through reduction in patient numbers and case severity.

Communities must be prepared for the cascading second- and third-order consequences of the interventions, such as increased workplace absenteeism related to child-minding responsibilities if schools dismiss students and childcare programs close.

d. Assumptions

1) A well-matched pandemic strain vaccine will not be available when a pandemic begins.
2) At the onset of a first pandemic wave, there will not be sufficient quantities of influenza antiviral medications available for general distribution.
3) Existing antiviral medications may not be effective against a future pandemic strain.
4) Implementing targeted, layered NPIs in a timely and coordinated fashion will require advanced planning.

2. MISSION

Communities will target those at the nexus of transmission and will implement layered, multiple nonpharmaceutical interventions to mitigate the effects of a pandemic by reducing transmission to the greatest extent possible.

3. EXECUTION

a. Concept

The use of NPIs for mitigating a community-wide epidemic has three major goals:

1) Delay the exponential growth in incident cases and shift the epidemic curve to the right in order to "buy time" for production and distribution of a well-matched pandemic strain vaccine.
2) Decrease the epidemic peak.
3) Reduce the total number of incident cases, thus reducing community morbidity and mortality.

b. Intent

The use of non-pharmaceutical interventions to mitigate an influenza pandemic is one component of a comprehensive community mitigation strategy that includes both pharmaceutical and non-pharmaceutical measures. Combining the use of antiviral medications with these interventions may enhance the overall effectiveness of non-pharmaceutical strategies.

c. Framework

The pandemic mitigation framework that is proposed is based upon an early, targeted, layered application of multiple partially effective non-pharmaceutical measures. Measures should be initiated early before explosive growth of the epidemic and, in the case of severe pandemics, maintained consistently during an epidemic wave in a community. The pandemic mitigation interventions include:

1) Isolation and treatment with influenza antiviral medications of all persons with confirmed or probable pandemic influenza. Isolation may occur in the home or healthcare setting, depending on the severity of an individual's illness and/or the current capacity of the healthcare infrastructure.
2) Voluntary home quarantine of members of households that are in contact with confirmed or probable influenza case(s) of pandemic influenza.
3) Dismissal of children from school classrooms and child care programs along with preventing the re-congregation of children in similarly dense enclosed spaces.

4) Use of social distancing of adults in the community which may include cancellation of large public gatherings.

All such community-based strategies should be used in combination with individual infection control measures, such as hand washing and cough etiquette.

d. Role of SLTT

Decisions about what tools should be used during a pandemic will be made by SLTT authorities and should be based on the observed severity of the event, its impact on specific subpopulations, the expected benefit of the interventions, the feasibility of success in modern society, the direct and indirect costs, and the consequences on critical infrastructure, healthcare delivery, and society.

The most controversial elements (e.g., prolonged dismissal of students from schools and closure of child care programs) are not likely to be needed in less severe pandemics, but these steps may save lives during severe pandemics. Just as communities plan and prepare for mitigating the effect of severe natural disasters (e.g., hurricanes), so they should also plan and prepare for mitigating the effect of a severe pandemic.

4. COORDINATING INSTRUCTIONS

a. The Pandemic Severity Index (PSI)

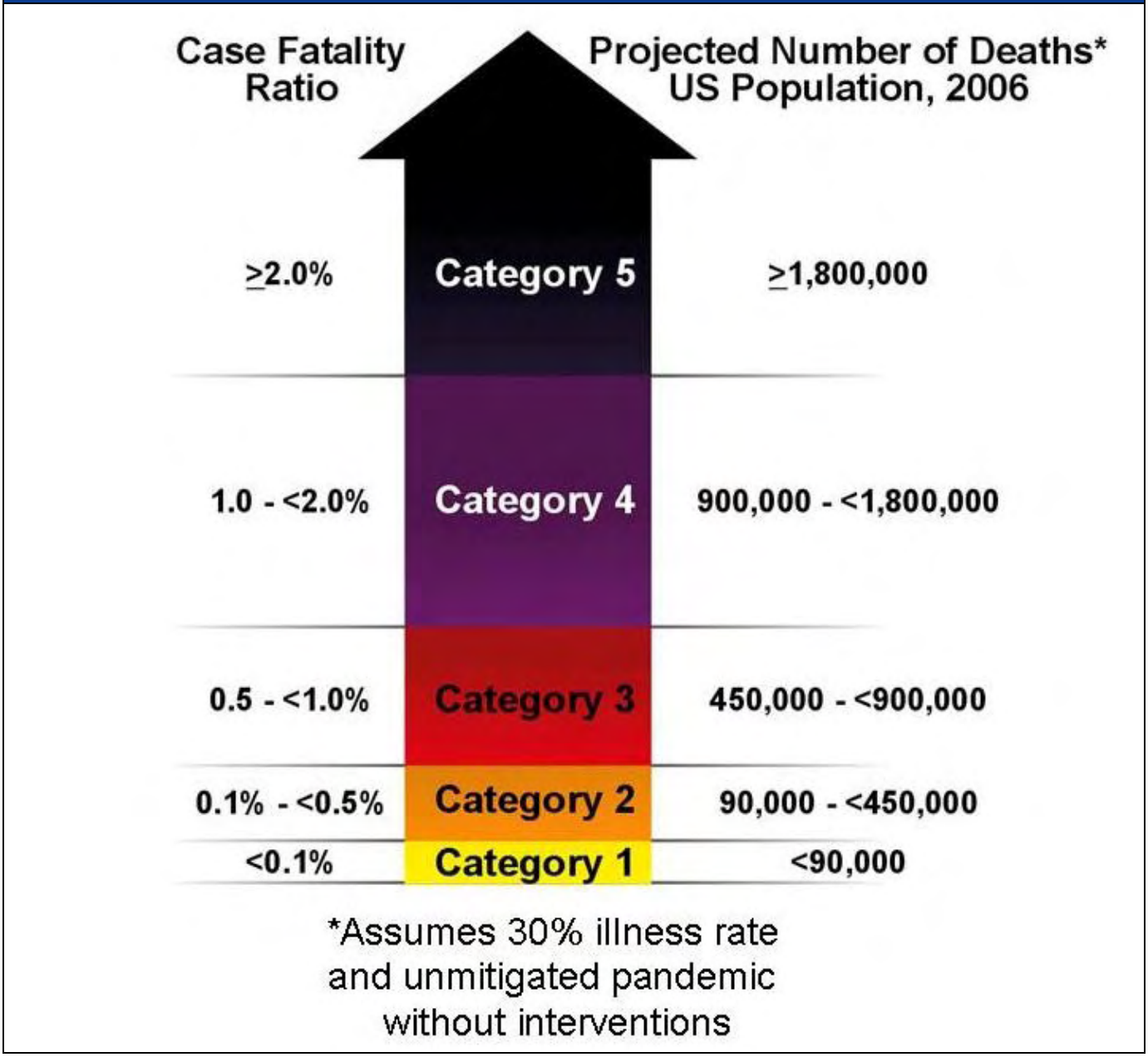
1) The Pandemic Severity Index, which uses case fatality ratio as the critical driver for categorizing the severity of a pandemic (Figure A), is designed to enable estimation of the severity of a pandemic on a population level to allow better forecasting of the impact of a pandemic and to enable recommendations to be made on the use of mitigation interventions that are matched to the severity of future influenza pandemics.

2) Categories

Future pandemics will be assigned to one of five discrete categories of increasing severity (Category 1 to Category 5). The Pandemic Severity Index provides communities a tool for scenario-based contingency planning to guide local pre-pandemic preparedness efforts. Accordingly, communities facing the imminent arrival of pandemic disease will be able to

use the pandemic severity assessment to define which pandemic mitigation interventions are indicated.

Figure 6: – Pandemic Severity Index



3) Use of Nonpharmaceutical Interventions by Severity Category

CDC's interim NPI guidance proposes a community mitigation strategy that matches recommendations on planning for use of selected NPIs to categories of severity of an influenza pandemic. These planning recommendations are made on the basis of an assessment of the possible benefit to be derived from implementation of these measures weighed against the cascading second- and third-order consequences that may arise from their use. Cascading second- and third-order consequences are chains of effects that may arise because of the intervention and may require additional planning and intervention to mitigate. The term generally refers to foreseeable unintended consequences of intervention. For example, dismissal of students from school may lead to the second-order effect of workplace absenteeism for child minding. Subsequent workplace absenteeism and loss of household income could be especially problematic for individuals and families living at or near subsistence levels. Workplace absenteeism could also lead to disruption of the delivery of goods and services essential to the viability of the community.

4) For Category 4 or Category 5 pandemics, a planning recommendation is made for use of all listed NPIs (Table A). In addition, planning for dismissal of students from schools and school-based activities and closure of childcare programs, in combination with means to reduce out-of-school social contacts and community mixing for these children, should encompass up to 12 weeks of intervention in the most severe scenarios. This approach to pre-pandemic planning will provide a baseline of readiness for community response. Recommendations for use of these measures for pandemics of lesser severity may include a subset of these same interventions and potentially for shorter durations, as in the case of social distancing measures for children.

5) For Category 2 and Category 3 pandemics, planning for voluntary isolation of ill persons is recommended; however, other mitigation measures (e.g., voluntary quarantine of household members and social distancing measures for children and adults) should be implemented only if local decision-makers determine their use is warranted due to characteristics of the pandemic within their community. Pre-pandemic planning for the use of mitigation strategies within these two Pandemic Severity Index categories should be done with a focus on a

duration of 4 weeks or less, distinct from the longer timeframe recommended for the more severe Category 4 and Category 5 pandemics. For Category 1 pandemics, voluntary isolation of ill persons is generally the only community-wide recommendation, although local communities may choose to tailor their response to Category 1-3 pandemics by applying NPIs on the basis of local epidemiologic parameters, risk assessment, availability of countermeasures, and consideration of local healthcare surge capacity. Thus, from a pre-pandemic planning perspective for Category 1, 2, and 3 pandemics, capabilities for both assessing local public health capacity and healthcare surge, delivering countermeasures, and implementing these measures in full and in combination should be assessed.

Table 9: Summary of the Community Mitigation Strategy by Pandemic Severity

	Pandemic Severity Index		
Interventions* by Setting	**1**	**2 and 3**	**4 and 5**
Home			
Voluntary isolation of ill at home (adults and children); combine with use of antiviral treatment as available and indicated	Recommend†§	Recommend†§	Recommend †§
Voluntary quarantine of household members in homes with ill persons¶ (adults and children); consider combining with antiviral prophylaxis if effective, feasible, and quantities sufficient	Generally not recommended	Consider **	Recommend **
School			
Child social distancing			
-dismissal of students from schools and school based activities, and closure of child care programs	Generally not recommended	Consider: ≤4 weeks††	Recommend: ≤12 weeks§§
-reduce out-of school social contacts and community mixing	Generally not recommended	Consider: ≤4 weeks ††	Recommend: ≤12 weeks§§
Workplace / Community			
Adult social distancing			
-decrease number of social contacts (e.g., encourage teleconferences, alternatives to face-to-face meetings)	Generally not recommended	Consider	Recommend
-increase distance between persons (e.g., reduce density in public transit, workplace)	Generally not recommended	Consider	Recommend
-modify, postpone, or cancel selected public gatherings to promote social distance (e.g., stadium events, theater performances)	Generally not recommended	Consider	Recommend
-modify work place schedules and practices (e.g., telework, staggered shifts)	Generally not recommended	Consider	Recommend

Generally Not Recommended = Unless there is a compelling rationale for specific populations or jurisdictions, measures are generally not recommended for entire populations as the consequences may outweigh the benefits.

Consider = Important to consider these alternatives as part of a prudent planning strategy, considering characteristics of the pandemic, such as age-specific illness rate, geographic distribution, and the magnitude of adverse consequences. These factors may vary globally, nationally, and locally.

Recommended = generally recommended as an important component of the planning strategy.

*All these interventions should be used in combination with other infection control measures, including hand hygiene, cough etiquette, and personal protective equipment such as face masks. Additional information on infection control measures is available at www.pandemicflu.gov.

†This intervention may be combined with the treatment of sick individuals using antiviral medications and with vaccine campaigns, if supplies are available

§Many sick individuals who are not critically ill may be managed safely at home

¶The contribution made by contact with asymptomatically infected individuals to disease transmission is unclear. Household members in homes with ill persons may be at increased risk of contracting pandemic disease from an ill household member. These household members may have asymptomatic illness and may be able to shed influenza virus that promotes community disease transmission. Therefore, household members of homes with sick individuals would be advised to stay home.

**To facilitate compliance and decrease risk of household transmission, this intervention may be combined with provision of antiviral medications to household contacts, depending on drug availability, feasibility of distribution, and effectiveness; policy recommendations for antiviral prophylaxis are addressed in a separate guidance document.

††Consider short-term implementation of this measure—that is, less than four weeks.

§§Plan for prolonged implementation of this measure—that is, one to three months; actual duration may vary depending on transmission in the community as the pandemic wave is expected to last six to eight weeks.

b. Triggers for Initiating Use of Nonpharmaceutical Interventions

The timing of initiation of various NPIs will influence their effectiveness. Implementing these measures prior to the pandemic may result in economic and social hardship without public health benefit and, over time, may result in "intervention fatigue" and erosion of public adherence. Conversely, implementing these interventions after extensive spread of pandemic influenza illness in a community may limit the public health benefits of employing these measures. Identifying the optimal time for initiation of these interventions will be challenging because implementation needs to be early enough to preclude the initial steep upslope in case numbers and long enough to cover the peak of the anticipated epidemic curve while avoiding intervention fatigue.

CDC NPI guidance suggests that the primary activation trigger for initiating interventions be the arrival and transmission of pandemic virus. This trigger is best defined by a laboratory-

confirmed cluster of infection with a novel influenza virus and evidence of community transmission (i.e., epidemiologically linked cases from more than one household).

Defining the proper geospatial-temporal boundary for this cluster is complex and should recognize that our connectedness as communities goes beyond spatial proximity and includes ease, speed, and volume of travel between geopolitical jurisdictions (e.g., despite the physical distance, Hong Kong, London, and New York City may be more epidemiologically linked to each other than they are to their proximate rural provinces/areas). In order to balance connectedness and optimal timing, it is proposed that the geopolitical trigger be defined as the cluster of cases occurring within a U.S. State or proximate epidemiological region (e.g., a metropolitan area that spans more than one State's boundary). It is acknowledged that this definition of "region" is open to interpretation; however, it offers flexibility to State and local decision-makers while underscoring the need for regional coordination in pre-pandemic planning.

From a pre-pandemic planning perspective, the steps between recognition of a pandemic threat and the decision to activate a response are critical to successful implementation. Thus, a key component is the development of scenario-specific contingency plans for pandemic response that identify key personnel, critical resources, and processes. To emphasize the importance of this concept, guidance on triggers introduces the terminology of Alert, Standby, and Activate, which reflect key steps in escalation of response action.

Table 10: Triggers for Implementation of Mitigation Strategies by Pandemic Severity Index and U.S. Government Stages

Pandemic Severity Index	WHO Phase 6, U.S. Government Stage 3*	WHO Phase 6, U.S. Government Stage 4† and First human case in United States	WHO Phase 6, U.S. Government Stage 5§ and First laboratory-confirmed cluster in State or region¶
1	Alert	Standby	Activate
2 and 3	Alert	Standby	Activate
4 and 5	Standby**	Standby/Activate ††	Activate

Alert: Notification of critical systems and personnel of their impending activation.

Standby: Initiate decision-making processes for imminent activation, including mobilization of resources and personnel.

Activate: Implementation of the community mitigation strategy.

*Widespread human outbreaks in multiple locations overseas.

†First human case in North America.

§Spread throughout the United States.

¶Recommendations for regional planning acknowledge the tight linkages that may exist between cities and metropolitan areas that are not encompassed within state boundaries.

**Standby applies. However, Alert actions for Category 4 and 5 should occur during WHO Phase 5, which corresponds to U.S. Government Stage 2.

††Standby/Activate Standby applies unless the laboratory-confirmed case cluster and community transmission occurs within a given jurisdiction, in which case that jurisdiction should proceed directly to Activate community interventions defined in Table A.

Pre-pandemic planning for use of these interventions should be directed to lessening the transition time between Alert, Standby, and Activate. The speed of transmission may drive the amount of time decision-makers are allotted in each mode, as does the amount of time it takes to fully implement the intervention once a decision is made to Activate.

For the most severe pandemics (Categories 4 and 5), Alert is implemented during WHO Phase 5/U.S. Government Stage 2 (confirmed human outbreak overseas), and Standby is initiated during WHO Phase 6/U.S. Government Stage 3 (widespread human outbreaks in multiple locations overseas). Standby is maintained through Stage 4 (first human case in North America), with the exception of the State or region in which a cluster of laboratory-confirmed human pandemic influenza cases with evidence of community transmission is identified. The recommendation for that State or region is to Activate the appropriate NPIs when identification of a cluster with community transmission is made. Other States or regions Activate appropriate interventions when they identify laboratory-confirmed human pandemic influenza case clusters with evidence of community transmission in their jurisdictions.

For Category 1, 2, and 3 pandemics, Alert is declared during U.S. Government Stage 3, with step-wise progression by States and regions to Standby based on U.S. Government declaration of Stage 4 and the identification of the first human pandemic influenza case(s) in the United States. Progression to Activate by a given State or region occurs when that State or region identifies a cluster of laboratory-confirmed human pandemic influenza cases with evidence of community transmission in their jurisdiction.

c. Duration of Implementation

It is important to emphasize that as long as susceptible individuals are present in large numbers, disease spread may continue. Immunity to infection with a pandemic strain can only occur after natural infection or immunization with an effective vaccine. Preliminary analysis of historical data from selected U.S. cities during the 1918 pandemic suggests that duration of implementation is significantly associated with overall mortality rates. Stopping or limiting the intensity of interventions while pandemic virus was still circulating within the community was temporarily associated with increases in mortality due to pneumonia and influenza in many communities.

It is recommended for planning purposes that communities be prepared to maintain interventions for up to 12 weeks, especially in the case of Category 4 or Category 5 pandemics, where recurring epidemic waves may have significant impact. However, for less severe pandemics

(Category 2 or 3), a shorter period of implementation may be adequate for achieving public health benefit. This planning recommendation acknowledges the uncertainty around duration of circulation of pandemic virus in a given community and the potential for recrudescent disease when use of NPIs is limited or stopped, unless population immunity is achieved.

d. Critical Issues for the Use of Nonpharmaceutical Interventions

A number of outstanding issues should be addressed to optimize the planning for use of these measures. These issues include the establishment of sensitive and timely surveillance, the planning and conducting of multi-level exercises to evaluate the feasibility of implementation and the identification and establishment of appropriate monitoring and evaluation systems. Policy guidance in development regarding the use of antiviral medications for prophylaxis, community and workplace-specific use of personal protective equipment, and safe home management of ill persons must be prioritized as part of future components of the overall community mitigation strategy. In addition, generating appropriate risk communication content/materials and an effective means for delivery, soliciting active community support and involvement in strategic planning decisions, and assisting individuals and families in addressing their own preparedness needs are critical factors in achieving success.

APPENDIX 4 (MANAGEMENT AND DISTRIBUTION OF ANTIVIRAL DRUGS AND OTHER COUNTERMEASURES) TO ANNEX F

TO BE PUBLISHED